

What is claimed is:

1. A thin film deposition reactor comprising:
a reactor block 110 on which a wafer is placed;
a shower head plate 120 for uniformly maintaining a predetermined pressure by covering the reactor block 110;
a wafer block 140 installed in the reactor block 110, on which the wafer is to be seated;
an exhausting portion (not shown) connected to the reactor block 110 for exhausting a gas within the reactor block 110 to the outside;
a first connection line 121 installed on the shower head plate 120, through which a first reaction gas and/or inert gas supplied flow;
a second connection line 122 installed on the shower head plate 120, through which a second reaction gas and/or inert gas supplied flow; and
a diffusion plate 130 installed under the shower head plate 120, the diffusion plate having a plurality of spray holes 131, which are connected to the first connection line 121 and face the upper surface of a wafer *w* to spray the first reaction gas and/or inert gas onto the wafer *w*, and a plurality of nozzles 133, which are connected to the second connection line 122 and look toward the inner side surface of the reactor block 110 to spray the second reaction gas and/or inert gas toward the edges of the wafer *w*.

2. The thin film deposition reactor of claim 1, wherein the bottom of the diffusion plate 130 is concave.

3. The thin film deposition reactor of claim 1, wherein the bottom of the diffusion plate 130 is convex.

4. The thin film deposition reactor of claim 1, wherein the diffusion plate 130 is made up of a first diffusion plate 130a having the plurality of spray holes 131 connected to the first connection line 121, and a second diffusion plate 130b having the plurality of nozzles 133 connected to the second connection line 122.

1 5. The thin film deposition reactor of claim 1, further comprising a first
2 mixing portion 134 formed at the center of the inside of the diffusion plate 130, for
3 equally mixing the first reaction gas and the inert gas and diffusing the mixture to the
4 spray hole 131.

1 6. The thin film deposition reactor of claim 1, further comprising a second
2 mixing portion 135 formed between the second connection line 122 and the shower
3 head plate 120 for evenly mixing the second reaction gas and the inert gas, the second
4 mixing portion 135 having an auxiliary diffusion plate 135a in which holes 135b are
5 formed.

1 7. The thin film deposition reactor of claim 1, wherein the diffusion plate on
2 which the spray holes 131 are formed is larger than the wafer.

1 8. The thin film deposition reactor of claim 1, wherein the diameter of each
2 of the spray holes 131 is 1 to 2.5 mm.

1 9. The thin film deposition reactor of claim 8, wherein the number of spray
2 holes is 100 to 1000.

1 10. The thin film deposition reactor of claim 9, wherein the cross-section of
2 the diffusion plate between spray holes is shaped of upsidedown T so that thermal
3 energy from the wafer block is evenly conducted to the shower head plate to prevent the
4 diffusion plate 130 from being overheated.

1 11. The thin film deposition reactor of claim 10, wherein the cross-section of
2 the diffusion plate portion between spray holes is at least 5mm high to prevent the
3 diffusion plate from being bent at a high temperature.

1 12. The thin film deposition reactor of claim 1, wherein the number of nozzles
2 is 30 to 100.

1 13. The thin film deposition reactor of claim 1, wherein the interval (D)
2 between the diffusion plate and the wafer block 140 is 20 to 50mm.

3 14. The thin film deposition reactor of claim 1, further comprising a pumping
4 baffle 150 which is installed on the outer circumference of the wafer block 140, and has
5 a sidewall 150a installed on the lateral side of the wafer block 140 and a bottom wall
150b through which symmetrical holes 150c are formed, in order to improve the
equality of the thickness of a thin film on a wafer.